

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of
Lee D. Whetsel

TI-19785D.2

Div. of Serial No.: 09/686,709

Prior Art Unit: 2133

Filed: herewith

Prior Examiner: E. Moise

Title: Low Overhead Input and Output Boundary Scan Cells

LETTER TO THE OFFICIAL DRAFTSPERSON

February 6, 2004

Asst. Commissioner for Patents
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Alexandria, VA 22313-1450

Dear Sir:

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I hereby certify that the above correspondence is
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on February 6, 2004.

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Applicant submits 9 sheets of formal drawings for the
above-identified patent application.

Respectfully submitted,

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Reg. No. 29,043

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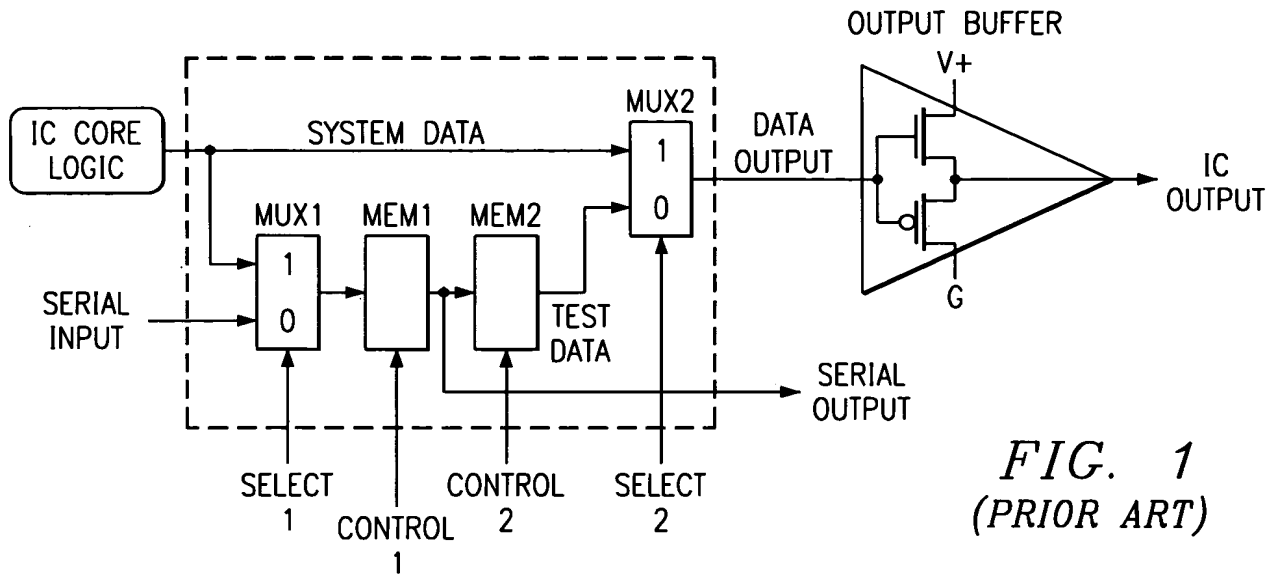


FIG. 1
(PRIOR ART)

OPERATION	SAMPLE	EXTTEST	INTTEST
SELECT 1	0 1 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0
CONTROL 1	0 C C C C C C C C 0 0	0 C C C C C C C C 0 0	0 C C C C C C C C 0 0
CONTROL 2	0 0 0 0 0 0 0 0 C 0	0 0 0 0 0 0 0 0 C 0	0 0 0 0 0 0 0 0 C 0
SELECT 2	1 1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0

FIG. 1A
(PRIOR ART)

→ TIME

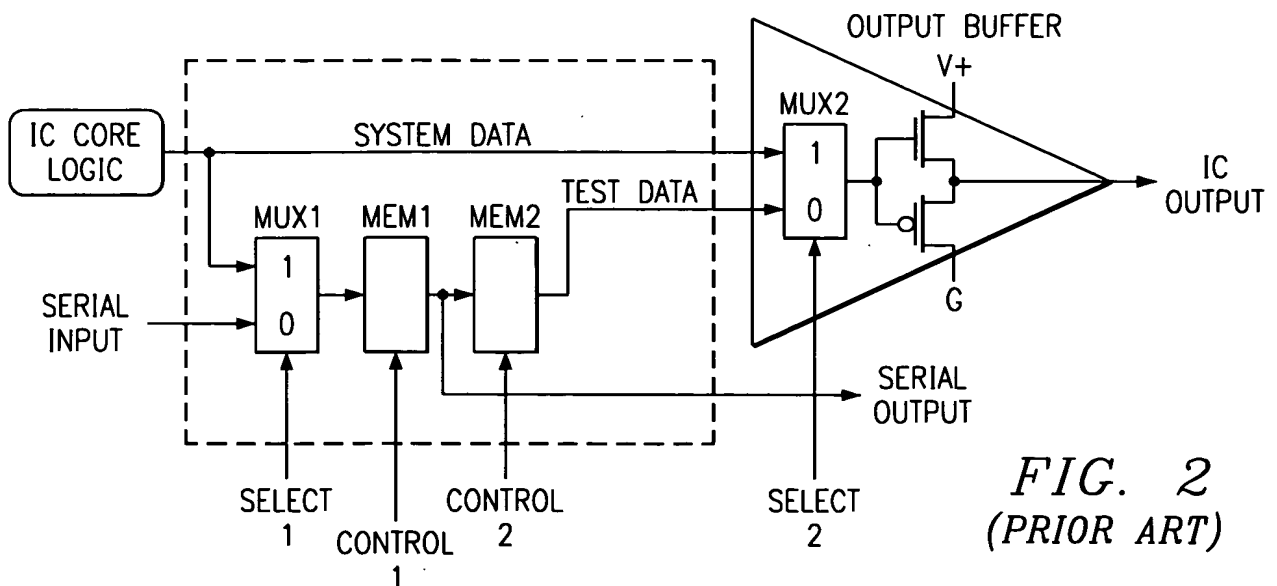


FIG. 2
(PRIOR ART)

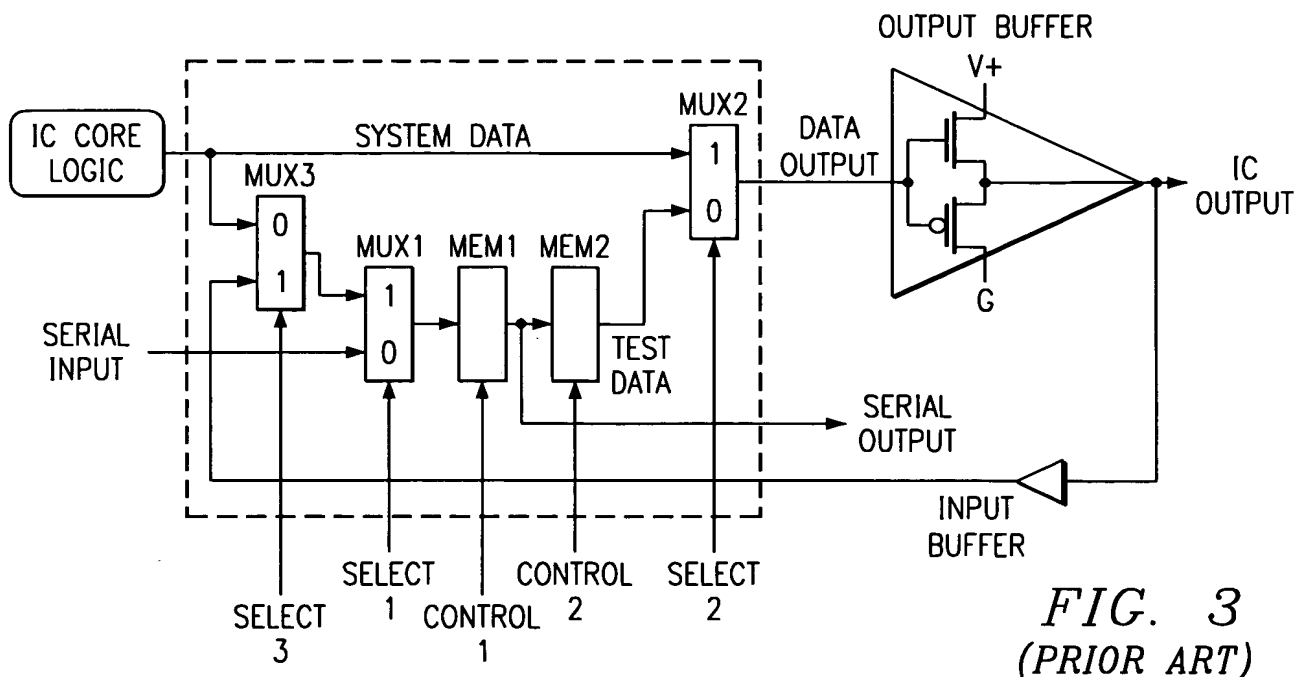


FIG. 3
(PRIOR ART)

OPERATION	SAMPLE	EXTEST	INTEST
SELECT 1	0 1 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0
CONTROL 1	0 C C C C C C C 0 0	0 C C C C C C C 0 0	0 C C C C C C C 0 0
CONTROL 2	0 0 0 0 0 0 0 0 C 0	0 0 0 0 0 0 0 0 C 0	0 0 0 0 0 0 0 0 0 0
SELECT 2	1 1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0
SELECT 3	0 0 0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0 0

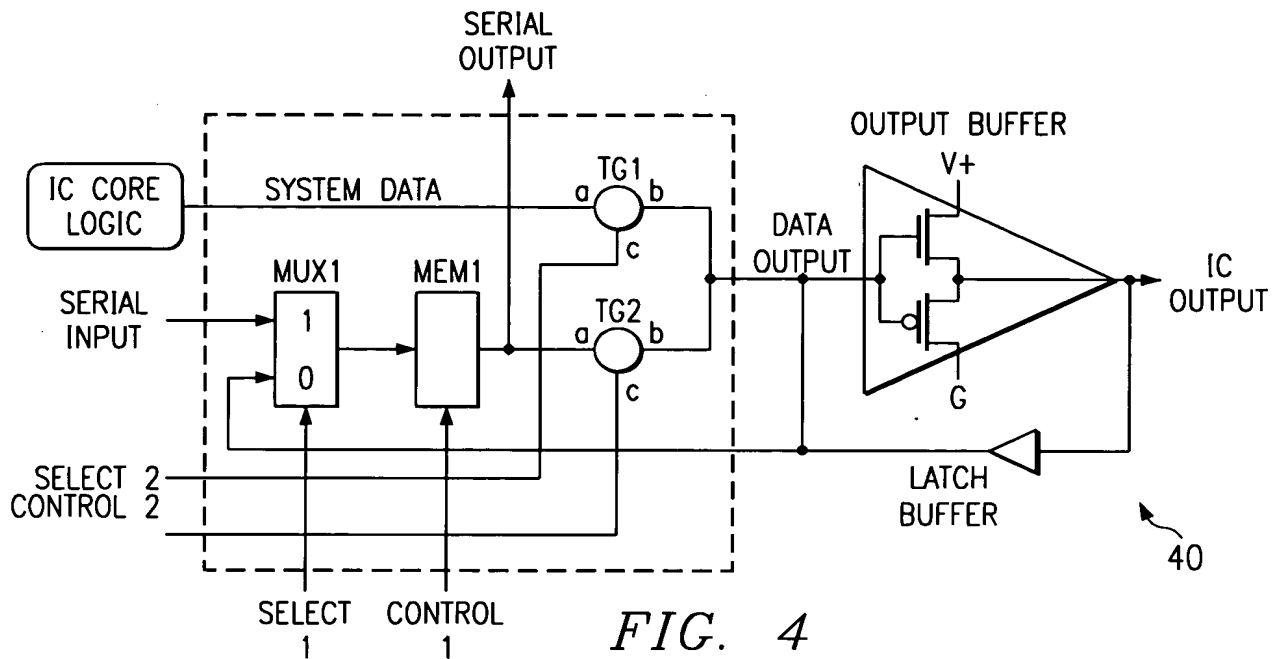
FIG. 3A
(PRIOR ART)

→ TIME

OPERATION	EXTEST1	EXTEST2	EXTEST3
SELECT 1	0 1 0 0 0 0 0 0 0 0	0 1 0 0	0 1 0 0 0 0 0 0 0 0
CONTROL 1	0 C C C C C C C 0 0	0 C 0 0	0 C C C C C C C 0 0
CONTROL 2	0 0 0 0 0 0 0 0 C 0	0 0 C 0	0 0 0 0 0 0 0 0 C 0
SELECT 2	0 0 0 0 0 0 0 0 0 0	0 0 0 0	0 0 0 0 0 0 0 0 0 0
SELECT 3	1 1 1 1 1 1 1 1 1 1	1 1 1 1	1 1 1 1 1 1 1 1 1 1

FIG. 3B
(PRIOR ART)

→ TIME



OPERATION	SAMPLE	EXTEST
SELECT 1	0 1 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0
CONTROL 1	0 C C C C C C C C 0 0	0 C C C C C C C C 0 0
CONTROL 2	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 C 0
SELECT 2	1 1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0 0

FIG. 4A

→ TIME

OPERATION	EXTEST
SELECT 1	0 1 0 0 0 0 0 0 0 0
CONTROL 1	0 C C C C C C C C 0 0
CONTROL 2	1 0 0 0 0 0 0 0 1 1
SELECT 2	0 0 0 0 0 0 0 0 0 0

FIG. 4B

→ TIME

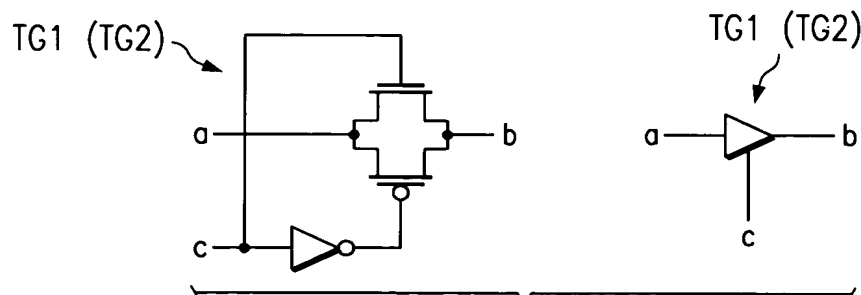


FIG. 5

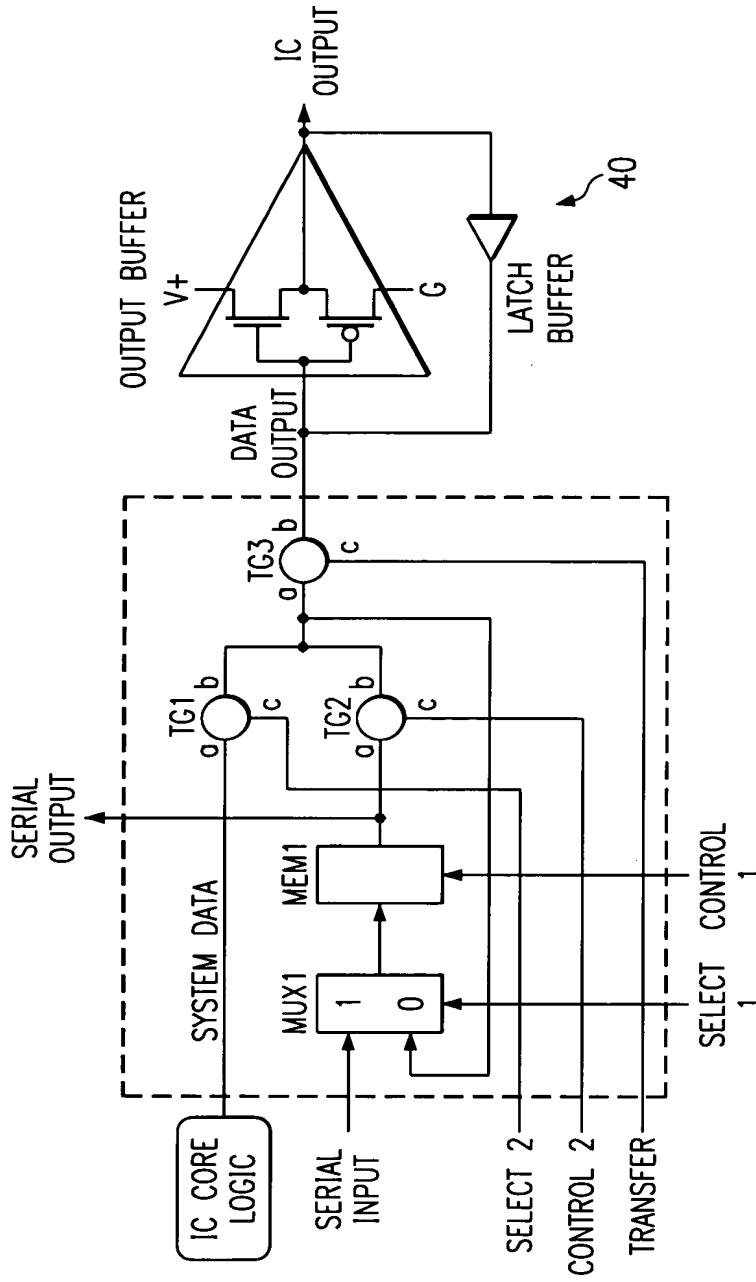


FIG. 6

OPERATION	SAMPLE	EXTEST	INTEST
SELECT 1	0 1 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0
CONTROL 1	0 C C C C C C C 0	0 C C C C C C C 0	0 C C C C C C C 0
CONTROL 2	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0
SELECT 2	1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0
TRANSFER	1 1 1 1 1 1 1 1 1	0 1 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0

→ TIME

FIG. 6A

FIG. 6B

OPERATION	EXTEST	INTEST
SELECT 1	0 1 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0
CONTROL 1	0 C C C C C C C 0 0	0 C C C C C C C 0 0
CONTROL 2	1 0 0 0 0 0 0 0 1 1	1 0 0 0 0 0 0 0 1 1
SELECT 2	0 0 0 0 0 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0
TRANSFER	1 1 0 0 0 0 0 0 1 1	1 0 0 0 0 0 0 0 1 1

→ TIME

FIG. 7
(PRIOR ART)

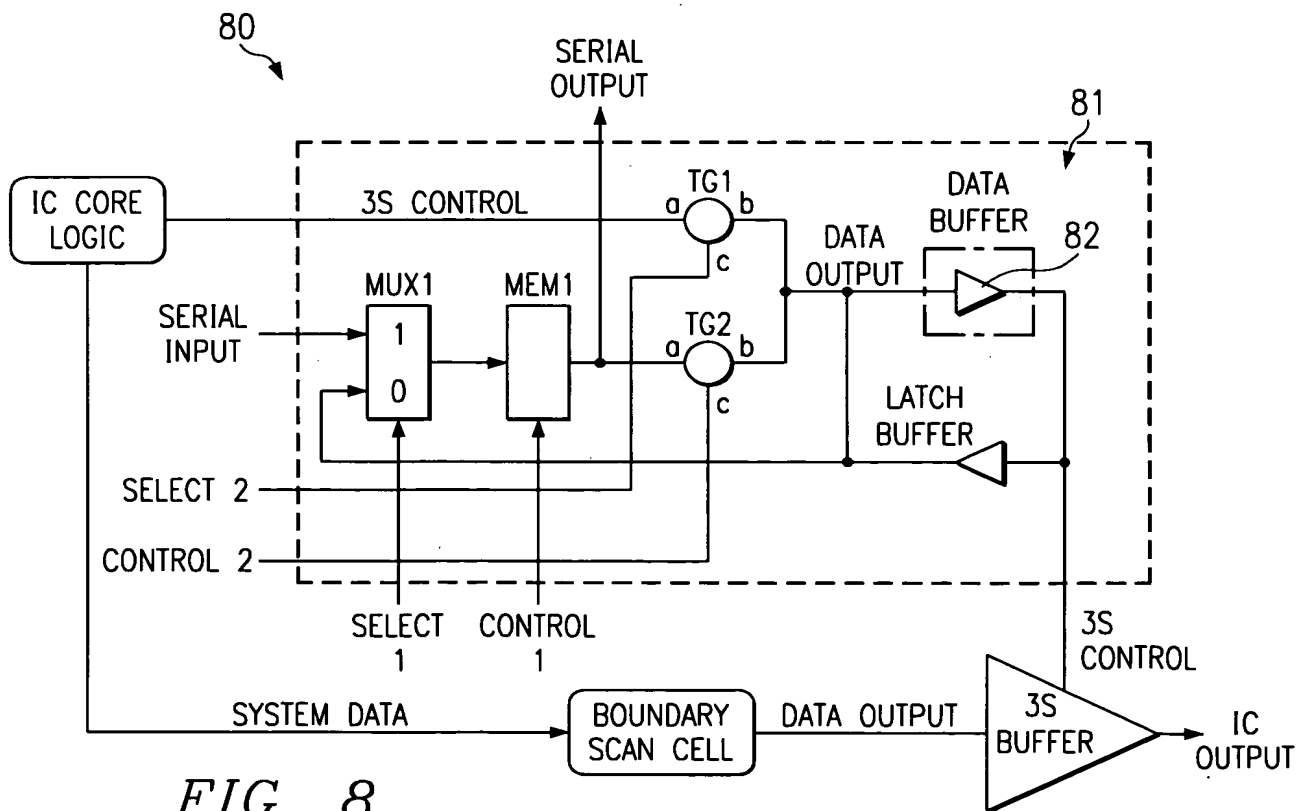
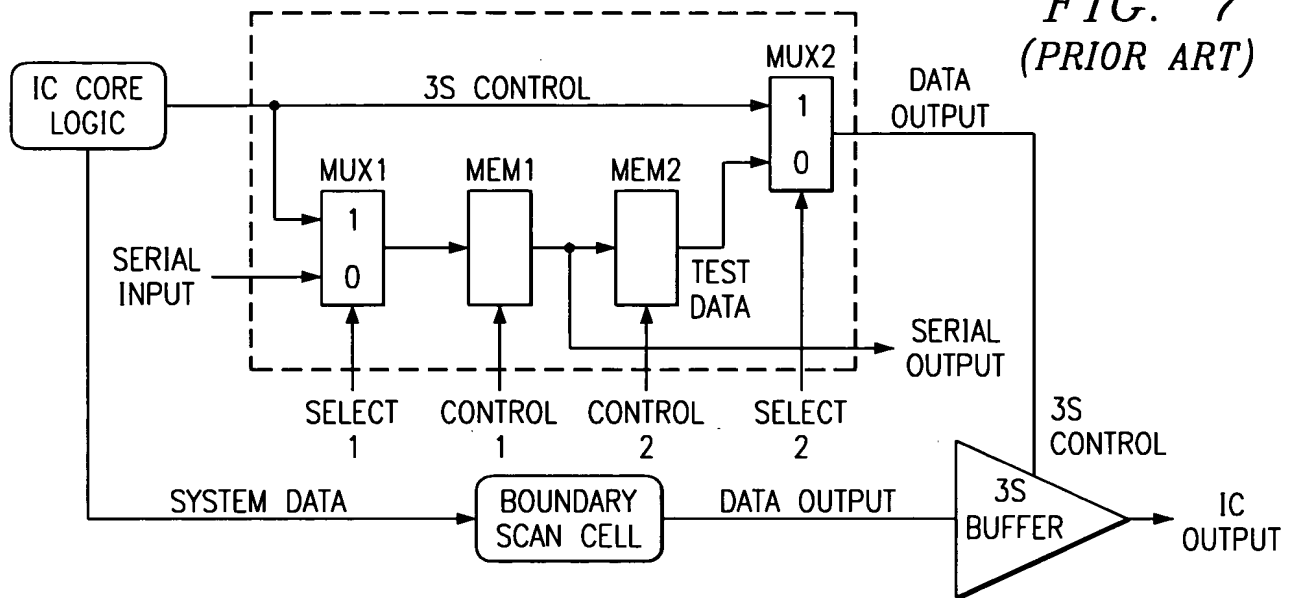
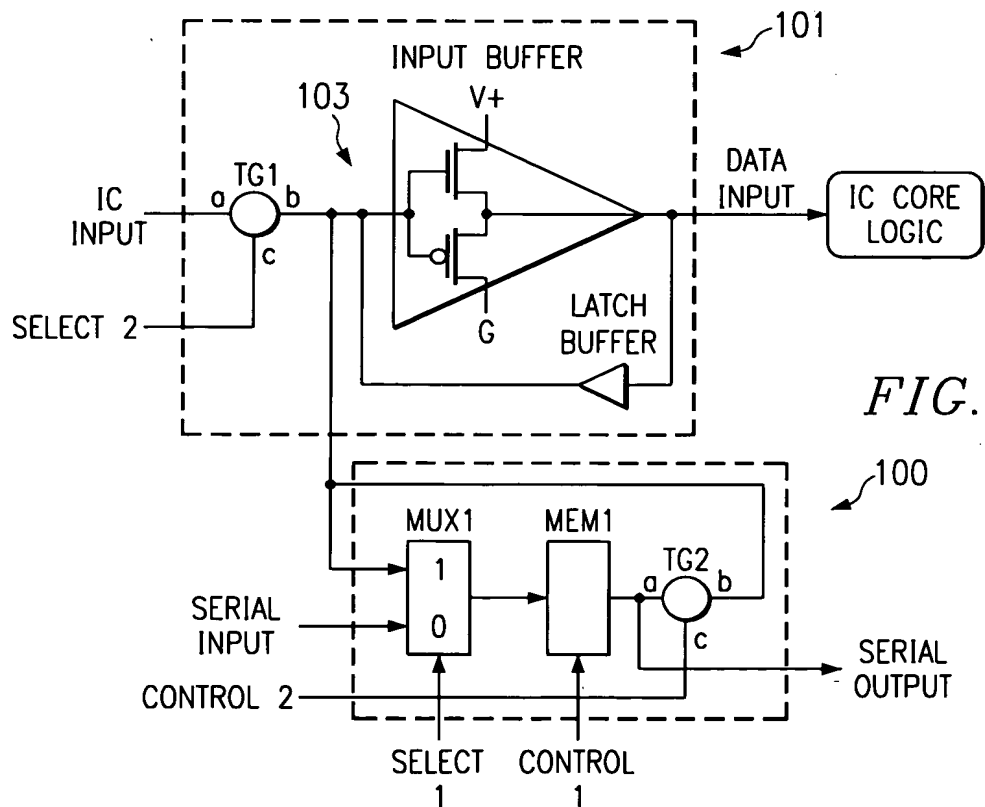
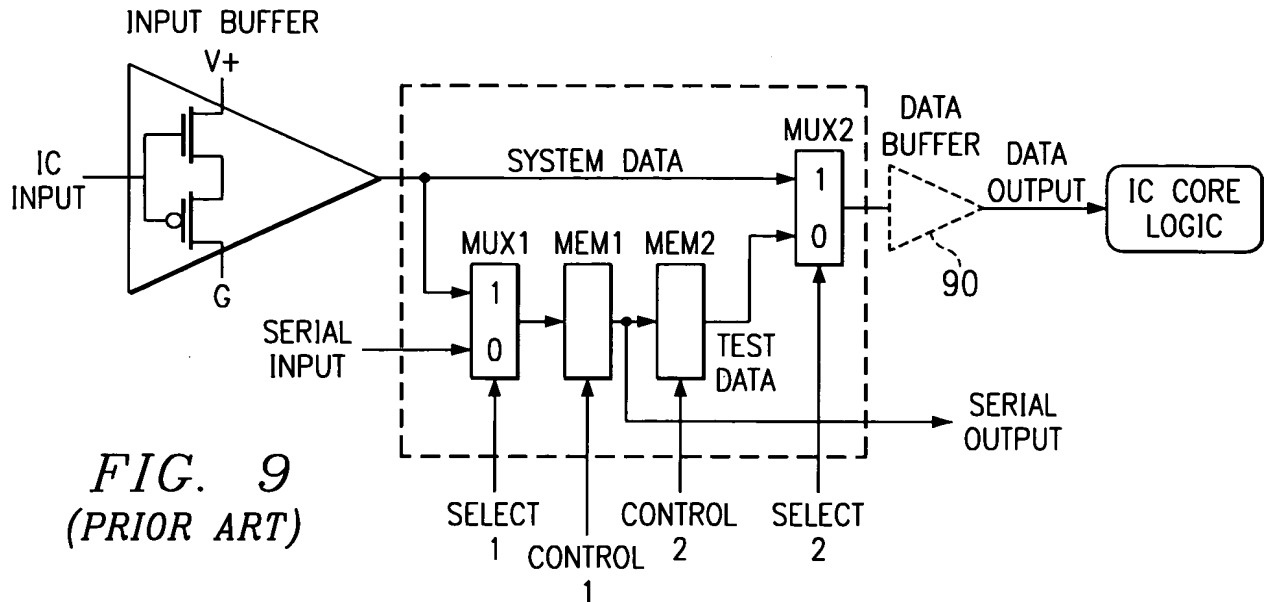
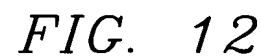
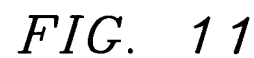
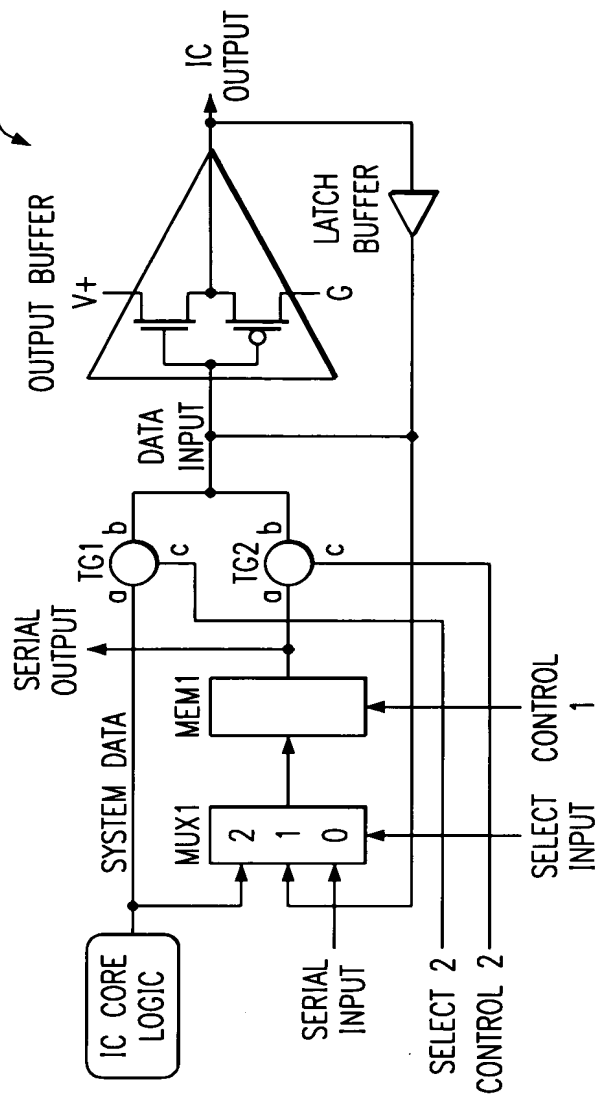
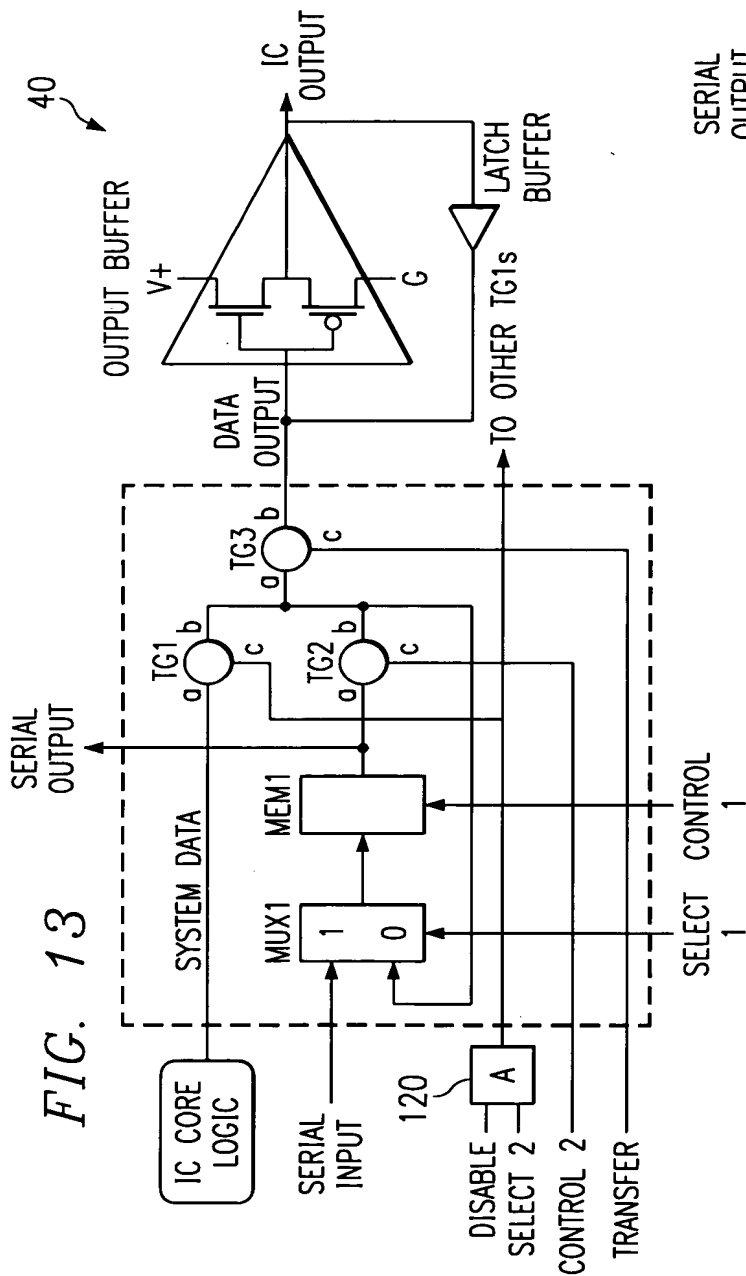


FIG. 8







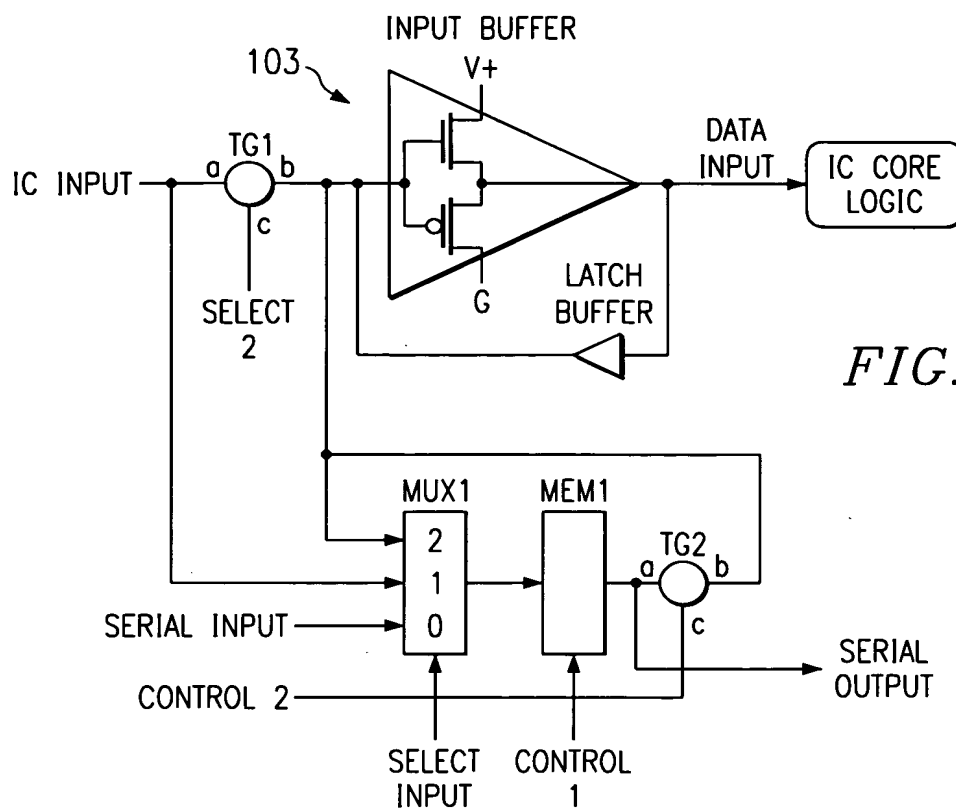


FIG. 15

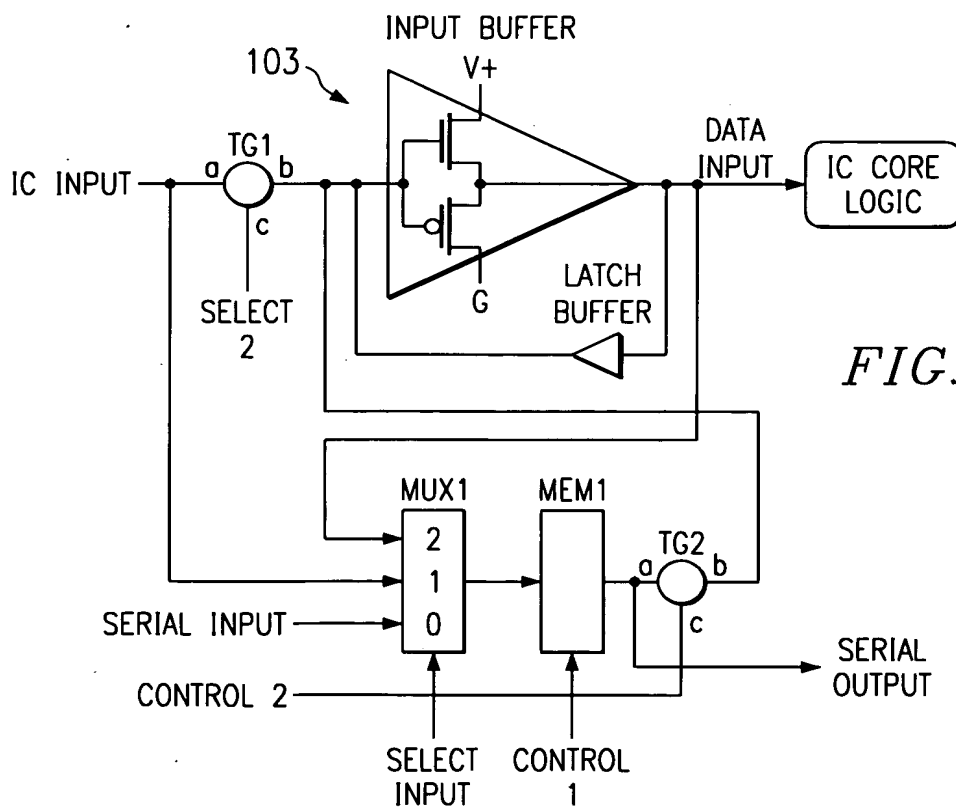


FIG. 16